

**CITYWIDE PCB MANAGEMENT PLAN TO ADDRESS  
PCBs IN NEW YORK CITY SCHOOL BUILDINGS**

**FOR THE**

**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**

**EPA CONSENT AGREEMENT AND FINAL ORDER**

**DOCKET NUMBER: TSCA-02-2010-9201**

**SCA LLW NO.: 060390**

**SCA CONTRACT NO.: C000013444**

**SCA JOB NO.: 42432**

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**November 2, 2016**

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- Appendix A EPA guidance document “Practical Actions for Reducing Exposure to PCBs in Schools and Other Buildings”
- Appendix B SCA Specification for PCB-Containing Caulk Removal Work - 02082
- Appendix C PCB Bulk Product & Remediation Waste Remedial Plan
- Appendix D PCB Bulk Product Waste Caulk Removal Schedule
- Appendix E Requests for Approval of TSCA Risk-Based Management of PCB Remediation Waste at P.S. 199M and 309K
- Appendix F Best Management Practices (BMP) for PCB Caulk in New York City School Buildings
- Appendix G SCA PCB Surface Soil Investigation Instructions
- Appendix H Certification

## **1.0 INTRODUCTION**

This document presents the Citywide PCB Management Plan (the Plan) to address PCB exposure in the school environment. This Plan has been developed by the New York City School Construction Authority (SCA) and the City of New York (collectively, the City) and is based on the Final Preferred Citywide Remedy, which was approved by the United States Environmental Protection Agency (EPA) on September 9, 2016.

As provided in Section III of Attachment A to the Consent Agreement and Final Order (CAFO) between EPA and the City, Docket Number TSCA-02-2010-9201, the purpose of the Plan is to implement the Preferred Citywide Remedy.

The Preferred Citywide Remedy was developed based on the requirement of the CAFO for performing a limited Pilot Study, in five (5) of New York City's schools, to determine the most effective strategies for assessing and reducing potential exposure to PCBs. The results of the Pilot Study were then used by the City to develop a recommended Preferred Citywide Remedy. EPA then considered input from an independent peer review panel and the public, as well as its own review of the recommended Preferred Citywide Remedy, to prepare a Final Preferred Citywide Remedy.

The CAFO states that the Plan shall include, among other items, an initial focus on schools with the highest potential exposure risks, and reasonable testing, including air quality testing for PCBs and/or other methods of evaluation, to characterize PCBs in schools to help set priorities for remediation and to guide acceptable remediation. The elements of the Plan employ the following strategies for managing PCBs in the school environment: PCB ballast and associated light fixture management and replacement; PCB caulk and other materials management and removal; Best Management Practices (BMPs); soil evaluation, excavation and replacement; air sampling; ventilation upgrades, and long term monitoring.

This Plan will be implemented at Relevant Schools as defined by the CAFO.

## **2.0 PCB BALLAST AND ASSOCIATED LIGHT FIXTURE MANAGEMENT AND REPLACEMENT**

The Pilot Study determined that removing and replacing PCB-containing light ballasts and associated fixtures is a successful remedial measure for lowering PCB levels in indoor air where concentrations were found to exceed the EPA air guidance values. Accordingly, and consistent with recent EPA guidance document “Practical Actions for Reducing Exposure to PCBs in Schools and Other Buildings”, which is included in Appendix A, light ballasts and any associated contaminated fixtures that may contain PCBs are scheduled to be removed from all New York City school buildings and replaced with non-PCB containing fixtures by December 31, 2016.

As of September 2016, light fixture replacement projects have been completed in 728 buildings, which include 1,144 schools and programs. There are 22 remaining buildings, which include 40 schools and programs where light fixture replacement projects are in-progress. It is presently anticipated that PCB-fixture replacement work in the remaining 22 buildings will be completed by December 31, 2016.

Based on testing performed during the Pilot Study, this significant effort, which is expected to be fully completed by the end of 2016, is believed to have the single greatest impact in minimizing potential building occupant exposure to PCBs.

### **3.0 PCB CAULK AND OTHER MATERIALS MANAGEMENT AND REMOVAL**

#### **3.1 Materials Removal during Capital Improvement Program Projects**

During the planning and design phase of Capital Improvement Program (CIP) projects, prior to commencement of construction, the SCA performs a detailed inspection of the areas to be impacted by the project to determine if PCB caulk will be impacted by the scope of the work. Any PCB caulk that is expected to be impacted during CIP projects is removed using safe work practices following construction specifications that define protocols to properly manage and dispose of PCBs. Rigorous dust control measures are undertaken while work is in progress, and cleaning and work area visual inspections are required at the conclusion of every work shift to minimize the potential exposure to PCB-contaminated dust during construction activities. Dust control and cleaning is performed in accordance with SCA Specification for PCB-Containing Caulk Removal Work - 02082 (see Appendix B). Dust control measures include shutting down and isolating heating, ventilation, and air conditioning (HVAC) equipment, closing and sealing windows; installing plastic isolation barriers, and operating a HEPA air filtration device outside the work area. Cleaning includes vacuuming with HEPA filtered vacuum cleaners, wet wiping/mopping and repeated vacuuming of work areas, and assuring that surfaces in and around the work area are free of dust generated during the work.

#### **3.2 Non-Capital Improvement Program Project Materials Management**

Materials that have been identified as PCB bulk product waste (BPW) by direct sample analysis, but which are not scheduled for removal as part of a renovation project, will be removed in accordance with site specific remediation plans. A specific plan, the “PCB Bulk Product & Remediation Waste Remedial Plan” dated September 23, 2016, has been prepared to address the removal of BPW (primarily PCB-contaminated caulk) that has been identified at the five Pilot Study School Buildings – P.S. 178X/176, P.S. 199M, P.S. 309K, P.S. 183Q and P.S. 3R, and thirteen (13) other select school buildings where the Department of Education’s Division of School Facilities (DSF) sampling and analysis has been performed. Also included in this plan is the removal of PCB remediation waste at P.S. 178X, P.S. 183Q, and P.S. 199M, which consists of PCB-contaminated replacement caulk that has been identified at certain locations, as well as door paint at P.S. 199M. The PCB Bulk Product & Remediation Waste Remedial Plan is included in Appendix C. A schedule for performing this work has also been prepared and is included in Appendix D.

Risk-based PCB management plans will be prepared, as needed, in accordance with 40 C.F.R. § 761.61(c) to manage identified PCB remediation waste in building materials that are to be left in place. A specific request has been prepared to address the management of PCB Remediation Waste that has been identified at P.S. 199M as well as P.S. 309K. The Request for Approval of TSCA Risked-Based Management of PCB Remediation Waste at P.S. 199M dated October 17, 2016 and the Request for Approval of TSCA Risked-Based Management of PCB Remediation Waste at P.S. 309K dated November 1, 2016 have been included in Appendix E.

## **4.0 BEST MANAGEMENT PRACTICES**

Best Management Practice (BMPs), which were approved by EPA on April 19, 2012 (see Appendix F for a copy of the approved BMPs), will continue to be implemented in all Relevant Schools on an ongoing basis. The BMPs are a set of protocols that help to mitigate exposure to PCB caulk through the use of regular inspections, stringent cleaning methods, and maintaining essential building systems (e.g., HVAC systems). The BMPs also include measures and practices to be used to protect interior and exterior PCB caulk from accidental damage and to identify the potential for deterioration requiring further action on an ongoing basis during school maintenance, repair and renovation. The BMPs include the following detailed sections:

- Roles and Responsibilities;
- Operation and Maintenance of Existing Caulk;
- Preventative Maintenance;
- PCB Caulk Disposal;
- BMP Tracking and Inspections;
- Communication and Training;
- Records Retention; and
- Appendices including List of Schools, EPA Fact Sheets, Quarterly Inspection and Photos, Specification Sections and relevant forms.

In addition to implementing EPA-approved 2012 BMPs, the interior of unit ventilators will be annually inspected for the presence of any staining related to the motor controllers, starting in winter 2016-17 and thereafter during summer breaks, and, where that condition is identified, it will be addressed in accordance with procedures set forth in section 4.3 below.

### **4.1 Measures and Practices to Address PCB Caulk**

Measures and practices are used on an ongoing basis during school maintenance, repair and capital improvement projects to protect deteriorated PCB caulk from accidental damage and to identify deteriorated caulk requiring further action. The BMPs call for the remediation of deteriorated PCB caulk by removal and replacement. While the BMPs were designed to focus on deteriorated caulk, they also address pliable, intact caulk that could also contain PCBs.

Maintenance of school buildings is performed by the Department of Education's Division of School Facilities (DSF). DSF performs quarterly visual inspections of interior caulk to determine if there is any exposed caulk that is flaking, cracking, or otherwise exhibiting visual signs of significant deterioration. During these inspections, pliable, intact caulk is also assessed for changes in condition that could increase exposure to PCBs. No specific sampling and analysis for PCBs in caulk is conducted; old caulk in relevant schools, whether deteriorated or intact, is presumed to be PCB-containing caulk. If deteriorated caulk is identified, DSF's Environmental Health and Safety Unit will remove and properly dispose of the deteriorated caulk as specified in the BMPs and DSF specific protocols.

## 4.2 HVAC Maintenance

The proper operation of ventilation systems is a critical component in the control of airborne PCBs in buildings. DSF is responsible for the condition and safe and proper operation of all HVAC equipment. To help ensure that building air exchange rates are maintained as per design, the DSF will continue to:

- Operate, regulate and maintain heating, ventilation and air-conditioning plants;
- Inspect, overhaul and repair heating, ventilation and air-conditioning systems;
- Inspect and change filters, as necessary and in consideration of the manufacturer's recommended maintenance schedule;
- Inspect, maintain and clean cooling systems;
- Inspect, keep free from objects that obstruct air flow, and clean registers;
- Inspect and clean accessible ducts, as necessary;
- Adjust fresh air inlet dampers on supply fans or heating stacks;
- Inspect heating, ventilation and air-conditioning systems annually, including circuit breakers and belts; and
- Inspect and lubricate fan motors and keep them clean. DSF will continue to clean any unit ventilators (also known as Univents) on the outside and inside, as necessary. This includes cleaning and oiling motor bearings, cleaning motor fans, water pans, and dampers.

DSF has previously reported that eleven school buildings constructed between 1950 and 1978 had longstanding deficiencies in their HVAC systems with no pre-existing plan for repair. The reported schools are 12X, 112X, 127X, 140X, 660X, 171Q, 185Q, 194Q, 193K, 495K and 14R. DSF has performed maintenance at these schools and has returned all or part of these ventilation systems to a functional condition. Exhaust fans and any blower fans that are present at each of the reported schools are now functional.

Additional investigations and repairs that may be necessary will be prioritized based on results of air samples collected (i.e. areas where air sampling results exceed EPA guidance levels will be given top priority).

## 4.3 Unit Ventilator Inspections

DSF will conduct annual cleaning of unit ventilators, starting in winter 2016-17 and thereafter during summer breaks, and will direct its custodians to inspect the interior of the unit for staining during this cleaning. If staining is found, the re-occupancy protocol designed for external leaks of light ballasts will be implemented and the leaking components of the unit ventilator will be removed. For unit ventilators with staining, DSF will also sample any insulation or interior coatings associated with the units to determine if these materials contain PCBs.

## 5.0 SOIL EVALUATION, EXCAVATION AND REPLACEMENT

Surface soil testing will be conducted for the presence of PCBs in outdoor exposure areas (i.e., soil within ten feet of the building face) following the completion of construction projects that disturb exterior PCB caulk. Site Specific Soil Sampling Plans will be created and implemented for each school as needed using guidelines specified in SCA's Phase II Surface Soil Investigation Outline (see Appendix G). Surface soil found to contain PCBs at a concentration greater than EPA's one



part per million (ppm) regulatory cleanup level (see 40 C.F.R § 761.61 (a)(4)) will be subject to remediation.

The permanent remedy to address soil exposure consists of soil excavation and offsite disposal in all areas where PCB concentrations are identified as greater than one (1) ppm. Confirmatory post excavation soil results will be obtained and the excavation will be backfilled using clean fill.

## **6.0 AIR SAMPLING STUDIES**

Air sampling studies will be performed in targeted schools to determine if airborne levels of PCBs are present above EPA guidance values in primary exposure areas after light ballasts have been removed and BMPs have been implemented. This air sampling will allow EPA and the City to gain a better understanding of the fate and transport of PCBs inside these schools. This targeted risk-based air sampling will be conducted in nine schools.

A passive air sampling study will also be conducted to assess side-by-side performance of a passive air sampling device against an accepted active air sampling method for measuring PCB concentrations in indoor air.

### **6.1 Risk-Based Indoor Air Sampling Study**

The City has committed to performing a Risk-Based Indoor Air Sampling Study inside nine (9) additional schools. Prior to implementation of the study, the City and EPA have agreed to a process for selecting schools, collecting samples and analyzing results. This process includes the following elements:

#### ***Selection of Schools***

- Sampling of nine (9) schools (outside of the five (5) Pilot Study Schools) where PCBs are suspected to be or are known to have been present.
- Four (4) of the nine (9) schools will be those previously identified by the City as being similar to P.S. 199M where persistent levels of PCBs were found after removal of PCB caulk and lighting.
- The universe from which the remaining five (5) schools will be selected will include, as the first priority, those schools where PCBs have been found. This universe includes the 11 schools that EPA sampled in 2011 and approximately 70 schools where PCBs were known to have been found through either the Capital Improvement Program or through prior sampling performed by DSF.
- The five schools referenced above will be selected based on the following additional factors which are identified in descending priority order:
  - The continued presence of old yet intact caulk;
  - The prior existence of lighting suspected to contain PCBs found through lighting upgrades or ballast failure incidents;
  - The capacity (e.g., available air exchanges) and condition of the ventilation system;
  - The age of the relevant building taking into account other information such as the presence of unit ventilators and if any renovations were done to the school building during the relevant time period between 1950 and 1978; and
  - The ages of students served.



### ***Sampling***

- Sampling in each of the nine (9) schools will include a round of nine (9) samples, excluding QA/QC samples, from representative primary and transitory spaces, under conditions that are typical for the normal daily operation of the schools.

### ***Results***

- The City will provide for laboratory analysis of the air samples and will provide results to EPA Region 2 for evaluation.

The City will prepare a specific Risk-Based Air Sampling Study Plan to be submitted to EPA with a sampling schedule by December 12, 2016.

## **6.2 Passive Air Sampling Study**

A corollary research study funded by EPA has been designed to assess the side-by-side performance of a passive air sampling device against an accepted active air sampling method for measuring PCB concentrations in indoor air. Such passive air sampling would be cheaper and easier to deploy than conventional active sampling, have a longer sampling duration and would benefit all school districts. Two schools (P.S. 183Q and P.S. 309K) were selected as the venues for this study. A total of four (4) areas per school were identified for the side-by-side sampling events. They include:

### **P.S. 183Q**

- Top landing of Northeast Staircase (B)
- Top landing of Southwest Staircase (D)
- Top landing of Southeast Staircase (A)
- Top landing of Northwest Staircase (C)

### **P.S. 309K**

- Room 118 – Therapist Office
- Top landing of East Stairwell
- Top landing of North Stairwell
- Top landing of West Stairwell

Air sampling at the schools was performed over a six-day period ending on October 13, 2016. Sample analysis is being performed by the EPA Region 2 Edison Laboratory and the relative percent difference between the two (2) sampling methods will be determined. Additional congener analysis will be performed on select sample locations, based upon the results of EPA Region 2 Edison Laboratory Aroclor analysis. A report will be produced by EPA describing the study and evaluating the suitability of passive air sampling for PCBs in schools based on the study results.

## **7.0 VENTILATION UPGRADES**

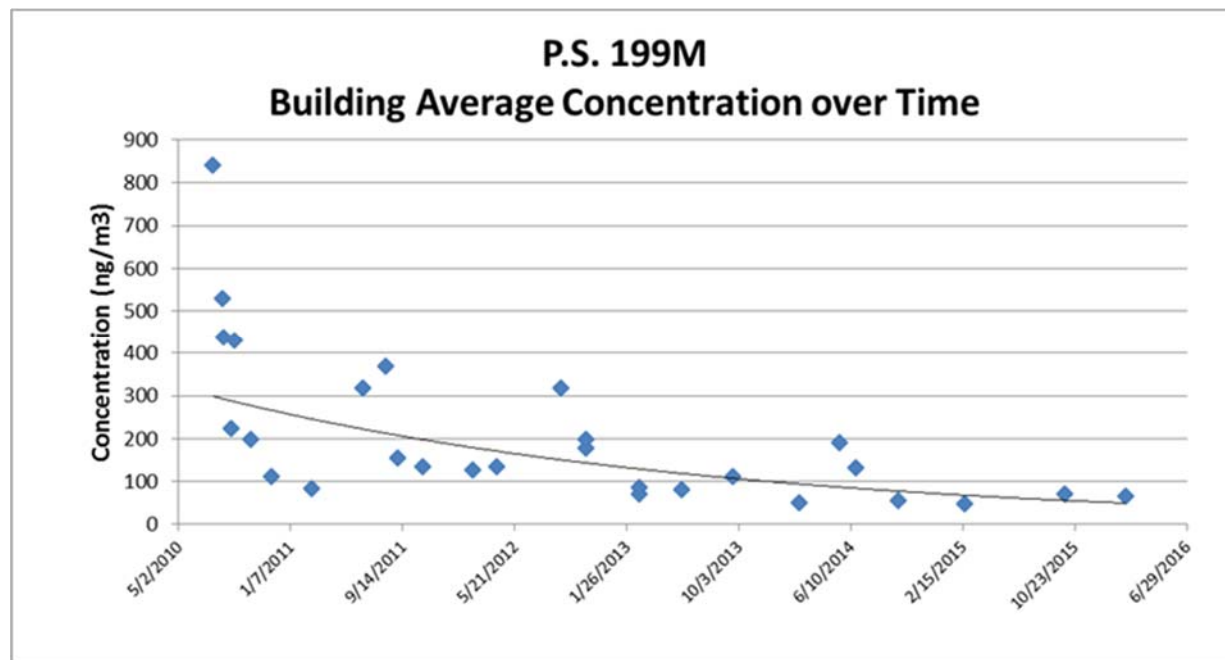
In order to facilitate greater ventilation in schools, potential modifications to window replacement specifications were explored by the SCA Architectural and Engineering (A&E) Division, particularly the addition of louvers to facilitate natural ventilation. Currently, most older schools feature double-hung windows, which can be opened from the bottom or the top manually with a

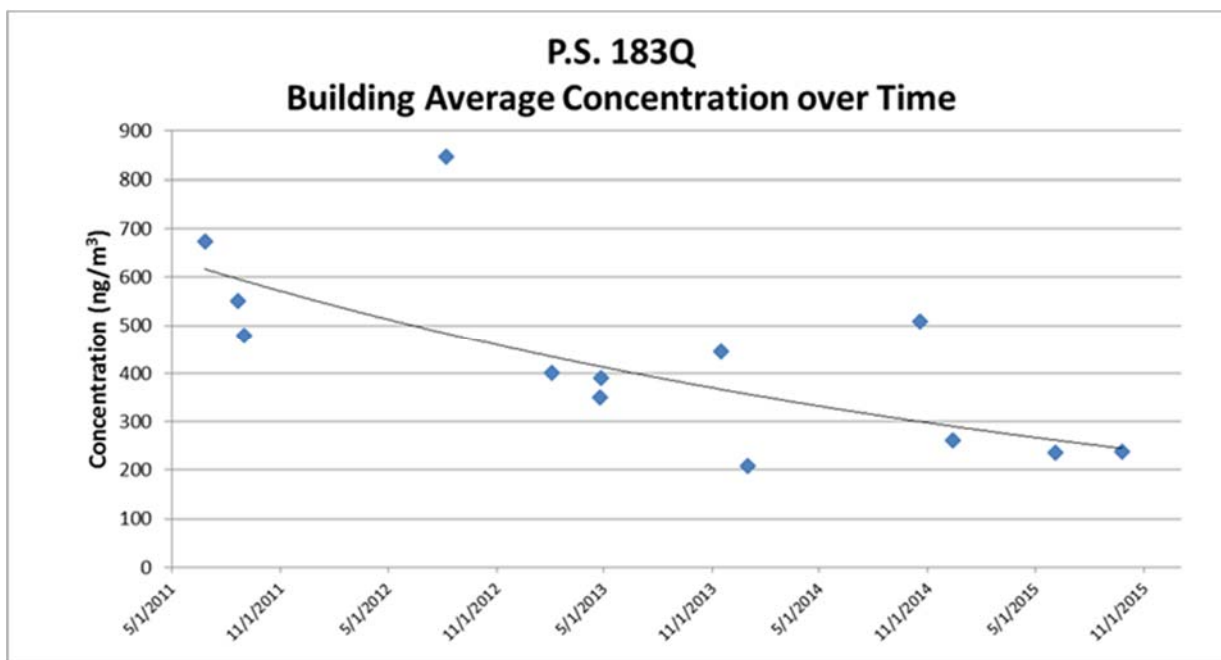
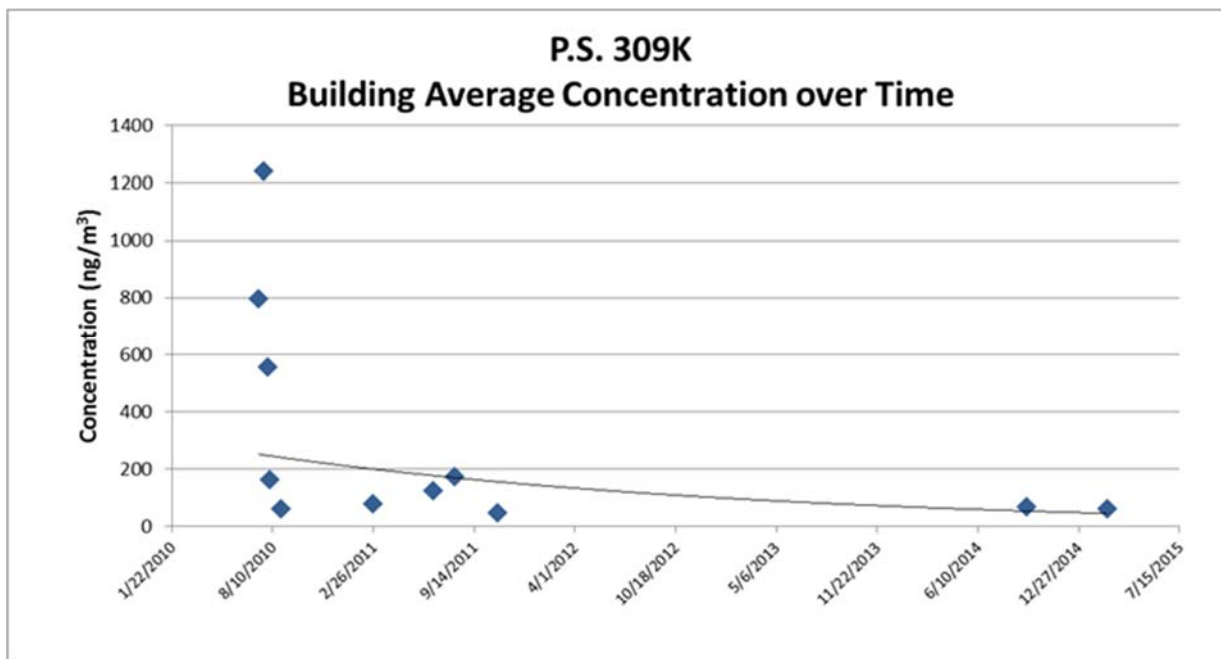
long pole. The addition of louvers to window replacements on a district-wide basis was found to be infeasible due to a lack of options on the market, and issues related to building code compliance, energy efficiency, and cost concerns. Upgrading ventilation mechanical systems was also found to be cost prohibitive on a district-wide basis. These types of upgrades will be considered on a case-by-case basis in schools where air sampling results exceed EPA guidance levels, if any such schools are identified.

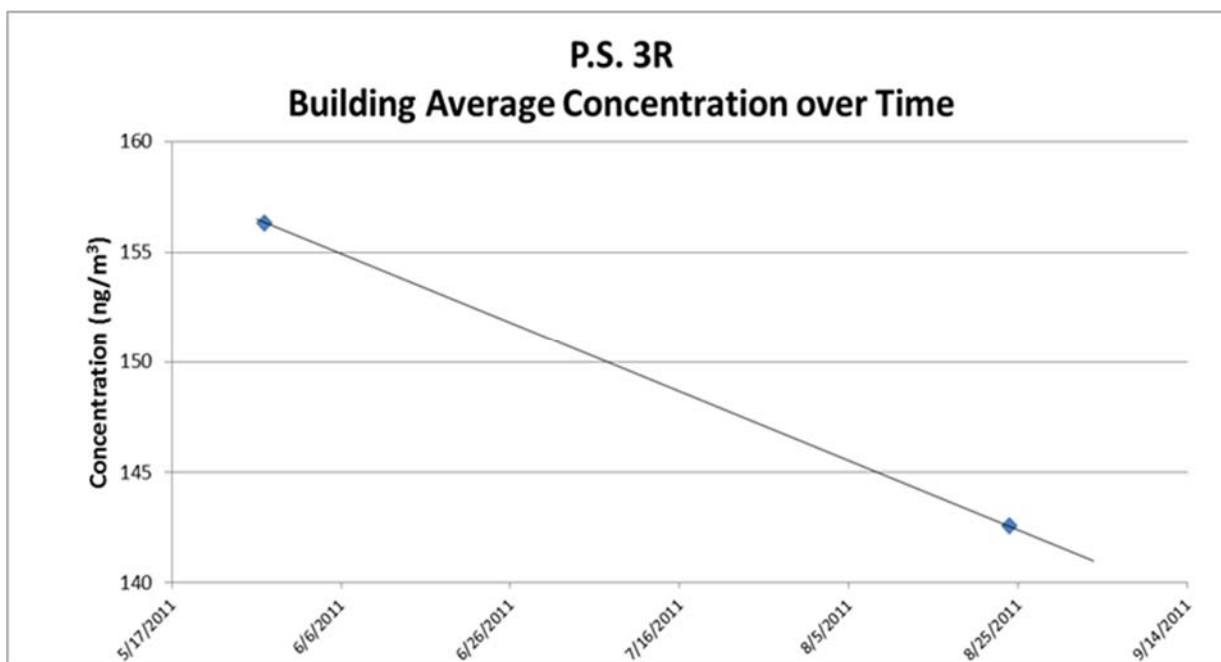
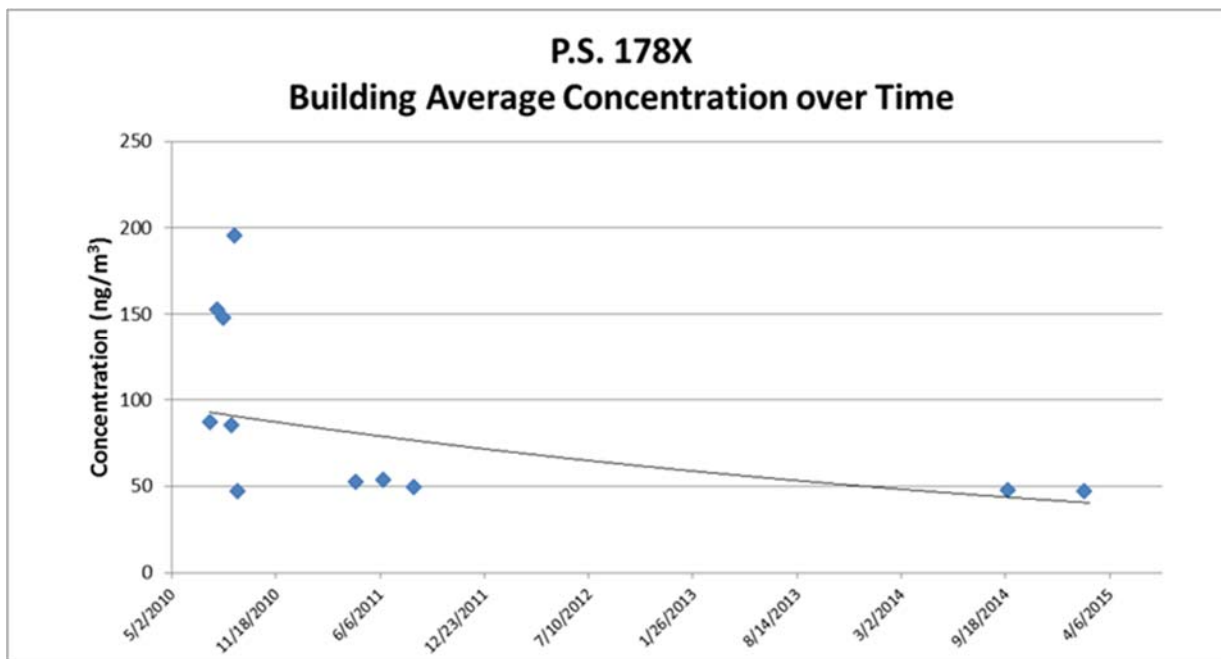
## 8.0 LONG TERM MONITORING

Pilot Study Long Term Monitoring has been conducted in each of the Pilot Schools since the completion of the initial Pilot Study remedial efforts in 2011. The results of these monitoring events indicate that all recent sampling efforts were below applicable EPA guidance values. The graphs below show the results of average airborne PCB concentrations over time at each of the five Pilot Schools. Results of monitoring events are also available for review at SCA's Website (<http://www.nycsca.org/Community/Environmental-Initiatives#EPA-NYC-PCB-Program-72>).

One additional final round of Pilot Study Long Term Monitoring air sampling was conducted in P.S. 199M on October 21, 2016. Upon receipt of results from this final sampling event that are below applicable EPA guidance values, Pilot Study Long Term Monitoring shall be deemed complete.







As described in Section 3.0, a risk-based management plan was prepared for EPA approval at P.S. 199M where PCB remediation waste will remain in-place. Long-term environmental monitoring (e.g., the collection of air and wipe samples for PCB analysis) as described in the Monitoring and Maintenance Implementation Plan (MMIP) is a part of each application with the details of the monitoring to be developed for EPA approval based on the specific conditions at each school.

## **9.0 CITIZENS PARTICIPATION PLAN**

Beginning in 2010, extensive outreach and citizen participation has been conducted throughout the Pilot Study. Public input reflecting a diverse range of interests and perspectives within the community was received throughout the process. Timely and accessible disclosure of information by the City and EPA has been provided, including technical data and the assumptions upon which the analyses were based. Documentation regarding the extensive public outreach and input is available for review on SCA's website. Public comments were also solicited following the generation of a report summarizing the results of the Pilot Study, and in 2014, public meetings on the Preferred Citywide Remedy were conducted in each borough. Outreach has also been important when incidents occur in schools. Letters are sent to parents following any incident where a PCB-containing light fixture ballasts fails and cleanup is required. Letters have also been sent to parents and school staff regarding light ballast removal scheduling. Sample letters are included in Local Law 69 reports and are available on SCA's website).

The City will continue to work with the EPA to inform the public about this Plan and its progress. Citizen participation will be facilitated by posting this Plan and other pertinent documentation on SCA's website, and continuing to respond to any pertinent questions from the public submitted through the comment portal on SCA's PCBs webpage.